

THE FORMER DISTRIBUTION OF THE INDIAN RHINOCEROS (*RHINOCEROS UNICORNIS*) IN INDIA AND PAKISTAN¹

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The existence of the rhinoceros in prehistoric times is known from different sites in the Indus valley of Pakistan, and in the Indian states of Rajasthan, Gujarat, Uttar Pradesh, Bihar and possibly Karnataka. There are written and pictorial records testifying to the occurrence of the animal in those regions of India and Pakistan at least until the 16th century. The species concerned is the Indian rhinoceros, *Rhinoceros unicornis* Linnaeus, 1758.

INTRODUCTION

Three recent species of rhinoceros are known to have occurred in parts of the Indian sub-continent. The double-horned Sumatran rhinoceros (*Dicerorhinus sumatrensis*) was reported from Assam and some regions bordering on Burma before 1880. The Javan rhinoceros (*Rhinoceros sondaicus*) was known definitively from the Sunderbans area of Bangladesh and has been said to exist as far north-west as Assam and Sikkim. The Indian rhinoceros (*Rhinoceros unicornis*) has been recorded in Assam, Nasirabad, Sylhet and Cachar (Rookmaaker 1980). It is still present in various reserves in N. E. India and in Nepal. The rhinoceros also once inhabited other parts of India and Pakistan, as described by Shebbeare (1953: 142): "[it] inhabited the sub-Himalayan tract during prehistoric times, the western limits of its range retreating from Peshawar, in the days of Babur (1505-1530), to Rohilkhand (the Bareilly district) in the mid-19th century and the Nepal terai during the present

century." The distribution of the rhinoceros in Pakistan and India outside the N.E. provinces until the 16th century and its retreat — the last record as far west as the Philibit district near the Nepal border dated from 1876 — has been reviewed or mapped by Lydekker (1907: 30), Guggisberg (1966: 135), Seshadri (1969: 92) and Mukherjee (1963: 45-47, 1974:339-341). Usually, these records have been assumed to pertain to *R. unicornis*, but the animals rarely have been identified as *R. sondaicus*. Recently, there have been proposals to translocate Indian rhinoceroses from Assam to other areas within their former range. The first pair to be translocated arrived in the Lal Sohanra National Park in Pakistan on 23 March 1982 (Nawaz 1982), while other animals are supposed to be sent to Dudwa National Park in U.P. soon (Baidya 1982).

In view of these plans, it is evidently important to establish the former limits of the range of the rhinoceros as accurately as possible. In this paper I shall review all available data concerning the distribution of the rhinoceros in Pakistan and India (west of Assam). These will be divided in the information on the fossil specimens found in this region, and the literary and iconographic sources dating

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from the 14th to the 17th century. The specific identity of this rhinoceros will also be discussed. Many sources have been quoted extensively, because many are only available with great difficulty to zoologists and because it is useful to compare them all in one place.

PREHISTORIC RECORDS

Rhinoceros remains have been discovered in prehistoric sites in several Indian states. Pictorial representations possibly dating from the same period add localities in Pakistan and in Bihar. Few of the fragmentary remains have been described in detail and their identification as *R. unicornis* often has been taken for granted. Guérin (1980) presented extensive descriptions with measurements of the post-cranial skeletons of the five living species of rhinoceros. He observed that specific differences, either qualitative or quantitative, could be found in almost all bones. More specifically, *R. sondaicus* resembled *R. unicornis* osteologically, but they could be distinguished by size, proportions and other qualitative criteria (Guérin 1980: 74). It may be insufficient to compare specimens on paper only, and hazardous to presuppose the same size in prehistoric and recent specimens of the rhinoceros. Nevertheless, I shall compare the published descriptions of the fossil bones found in India with the analyses by Guérin (1980). The locations and ages of the different sites were taken from the publications describing the rhinoceros fragments.

PAKISTAN

Harappa

(Sihawal district on Ravi river; 2500-1500 B.C.)

Prashad (1936: 31) described a fragment of a right scapula. The stated measurements

(length c. 470 mm, maximum width c. 250 mm) are larger than those of *R. sondaicus* (Guérin 1980: 77). This points at *R. unicornis* (Prashad 1936, Roberts 1977: 159, Nath 1968: 18).

Mohenjo Daro

(Indus valley; c. 3000 B.C.)

Several seals and pottery objects representing a rhinoceros were found in Mohenjo Daro (Marshall 1931, I: 72, 205, 348, 353, II: 387). The animal is sometimes depicted "standing over a manger-like object" possibly indicating its keeping in captivity (Marshall 1931, I: 348), while to Conrad (1968: 253) this suggested worship of the rhinoceros. Marshall (1931, I: 348) thought that the species must have been well-known to the people judging "from the frequency with which it is represented, and it was, therefore, likely to have been found in the close vicinity of Mohenjo Daro." Brentjes (1978: 159) identified the animals on the seals as *R. unicornis*.

INDIA

RAJASTHAN

Kalibangan

(Ganganagar district; 3500-400 B.C.)

Banerjee & Chakraborty (1973) reported the discovery in 1965 of four bone fragments referred to *R. unicornis*: a left tibia (distal diameter 125 mm), a right humerus (distal diameter 126 mm), a first phalanx of the 4th metatarsal, and a 3rd metatarsal of the right foot (length 190 mm). In all cases, the measurements are larger than those of living *R. sondaicus* and compare better with those of *R. unicornis* (Guérin 1980: 126, 79, 147; see Nath 1969: 107).

GUJARAT

Langhnaj

(23° 47'N, 72° 25'E; pre-pottery phase)

Zeuner (1952:130-131) gave details about a left scapula (length 430 mm) which showed traces possibly indicating its use as an anvil by a microlith-maker. To Zeuner, "its characters agree with the species *Rhinoceros unicornis*, though the teeth found at Langhnaj suggest the possibility that a sub-species occurred in Gujarat which is not identical with the surviving Nepal and Bengal races." There is no evidence substantiating this suggestion (see Sankalia & Karve 1949).

Clutton-Brock (1965: 9-10) mentioned more remains from Langhnaj: a left scapula (width of the neck 128, 6 mm), a right humerus, a talus, and a fragment of a molar tooth. The scapula and talus were referred to *R. unicornis*, while the other fragments were too damaged to allow proper identification.

Kaneval

(20 km N.W. of Cambay or Khambat;
8000-1200 B.C.)

Momin *et al.* (1973) reported some rhinoceros fragments found in different sites around Lake Kaneval: 3 (partial) cervical vertebrae and the proximal end of a tibia. The vertebrae are illustrated (Momin *et al.* 1973: figs. 2, 3), but these bones do not present specific characteristics (Guérin 1980: 74). Momin *et al.* (1973: fig. 1) figured the tibia, without description although suggesting its use as an anvil.

SIWALIK HILLS

During the last century, fossilized rhinoceros remains were found in several deposits in the

Siwalik hills and others of similar age (ranging from miocene to lower pleistocene). They were assigned to several (new) taxa:

Rhinoceros indicus [=unicornis] fossilis

Baker & Durand, 1836: 493;

Rhinoceros platyrhinus Falconer & Cautley, 1847, pls. 73-75;

Rhinoceros palaeindicus Falconer & Cautley, 1847, pls. 73-75;

Rhinoceros sivalensis Falconer & Cautley, 1847, pls. 73-75;

Rhinoceros perimensis Falconer & Cautley, 1847, pls. 73-75;

Rhinoceros namadicus Falconer, 1868, I: 157ff., 513;

Rhinoceros namadicus Lydekker, 1876 (not of Falconer).

Many of these forms were described in detail by Lydekker (1881, 1884: 82-83, 1885: 61-65, 1886), who synonymized his own *R. namadicus* from the Nerbudda valley with *R. unicornis* in 1886. The relation of these taxa to the recent species of *Rhinoceros* and to each other, whether (near-) identical or not, whether ancestral or not, has to my knowledge not been clarified sufficiently. Heissig (1972) recently described some ancient fragments from the lower and middle Siwalik-deposits as *Rhinoceros* (*Rhinoceros*) aff. *sivalensis*, *R. (Gaidatherium) browni*, *R. (G.) vidali*, *Didermoceros* aff. *sumatrensis* (one P²) and *Eurhinoceros sondaicus* (one P¹ and one P²). Guérin (1980: 168, 170) questioned the last two identifications as the material was very old and very limited.

As a neontologist and taxonomist, I was surprised at Heissig's use of *Eurhinoceros* as a full genus with the species *sondaicus*. *R. unicornis* is said to be the type-species of *Rhinoceros* Linnaeus, 1758 and *R. sondaicus* that of *Eurhinoceros* Gray, 1867 [=1868]. Gray (1868) divided the genus *Rhinoceros* into two

subgenera: typical *Rhinoceros* with *R. stenocephalus*, and *Eurhinoceros* with *R. javanicus* [=sondaicus], *R. unicornis*, *R. nasalis* and *R. floweri*. This too is a rather curious classification which, however, does not concern us at present. It would seem that Heissig's interpretation of *Eurhinoceros* would need further clarification.

UTTAR PRADESH

Mirzapur petroglyph

A rock drawing in the "Ghormangur rock-shelter near the fortress of Bidyergurh in the Mirzapur district" is described and illustrated by Cockburn (1883). It shows a single-horned rhinoceros surrounded by hunters, but its identity is not clear (Bhaduri *et al.* 1972: 404, Rookmaaker 1980: 258).

Banda

Cockburn (1883) found some fragmentary rhinoceros bones "in the ravines of the Ken river, 2 miles due south of the town of Banda" which he tentatively assigned to *R. unicornis*.

BIHAR

Chirand

(Saran district; c. 1700 B.C., neolithic)

Nath (1976) reported 4 fragments: a left humerus, upper molar tooth, left tibia and ulna. The bones are not described, but referred to *R. unicornis*.

MADHYA PRADESH

No material has been discovered in this state. Sagreiya (1969: 718) concluded that if the rhinoceros ever "did occur in parts of Madhya Pradesh, [it] disappeared before the Aryans arrived."

SOUTH INDIA

Lydekker (1880) described a single M³ from the alluvium of Madras as *R. unicornis* (see Hooijer 1946: 84). Another specimen found 3½ miles N. E. of Gokak, Belgaum district (Karnataka) was described as *Rhinoceros deccanensis* by Foote (1874). It appears premature to state on the basis of this meagre evidence, that *R. unicornis* used to occur in this part of India, which would allow future re-introduction (Krishne Gowda 1975-309).

HISTORICAL RECORDS

Several medieval Muslim authors wrote about encounters with the rhinoceros in Pakistan or India (Ettinghausen 1950). The majority seems to be based on second-hand information, but those by al-Beruni and Ibn Battuta deserve further consideration. Several Indian authors of the 16th and 17th century claimed to have observed these animals. This evidence was partly reviewed by Yule & Burnell (1903: 363, 762), Ali (1927) and Rao (1957: 269).

al-Beruni, one of the Muslim authors who wrote a book about India (c. 1030), gave the following details:

"The ganda exists in large numbers in India, more particularly about the Ganges. It is of the build of a buffalo, has a black scaly skin, and dewlaps hanging down under the chin. It has three yellow hoofs on each foot, the biggest one forward, the others on both sides. The tail is not long, the eyes lie low, further down the cheek than is the case with all other animals. On the top of the nose there is a single horn which is bent upwards. The Brahmins have the privilege of eating the flesh of the ganda. I have myself witnessed how an elephant coming across a young ganda was attacked by it.

The ganda wounded with its horn a fore-foot of the elephant, and threw it down on its face" (Sachau 1910: 203-204).

The author continued about his uncertainty whether the ganda was in fact the rhinoceros.

Ibn Battuta, an Arab traveller, saw rhinoceroses near the Indus river in 1334 as follows:

"After crossing the river of Sind called Banj Ab, we entered a forest of reeds, following the tracks which led through the midst of it, when we were confronted by a rhinoceros. In appearance it is a black animal with a huge body and a disproportionately large head. For this reason it has become the subject of a proverb, as the saying goes *Al-karkaddan ras bila badan* (rhinoceros, head and no torso). It is smaller than an elephant, but its head is many times larger than an elephant's. It has a single horn between its eyes, about three cubits in length and about a span in breadth. When it came out against us one of the horsemen got in its way; it struck the horse which he was riding with its horn, pierced his thigh and knocked him down, then went back into the thicket and we could not get at it. I saw a rhinoceros a second time on this road after the hour of afternoon prayer. It was feeding on plants but when we approached it, it ran away. I saw a rhinoceros yet another time when in the company of the king of India we had entered a jungle of reeds. The sultan was mounted on an elephant and we too were mounted on elephants along with him. The foot-soldiers and horsemen went in and beat it up, killed it and conveyed its head to the camp" (Gibb 1971: 596).

Babur, the Moghul emperor reigning from 1505 to 1530, hunted the rhinoceros several times. His accounts are quite extensive and

unfortunately too long to reproduce in full. In February 1519 he wrote:

"I went to hunt rhinoceros on the Sawati side [Suabi, west of the Indus river] which place people call also Karg-khana (Rhino-home). A few were discovered but the jungle was dense and they did not come out of it" (Beveridge 1970: 378).

One calf came out and escaped, another died when the jungle was set on fire. In December 1526, Babur had another encounter with the animal:

"There was a rhino in a bit of jungle near Bigram [Peshawar]. . . . It took its way across the plain. Humayun and those come with him from that side (Tramontana), who had never seen one before, were much entertained. It was pursued for two miles; many arrows were shot at it; it was brought down without having made a good set at man or horse. Two others were killed" (Beveridge 1970: 451).

When it came face to face with an elephant, it did not attack but turned in another direction. A few years later, in March 1529, near Benares no rhinoceros was discovered (Beveridge 1970: 657). Babur gave a comprehensive description of the rhinoceros in his list of the animals of Hindustan:

"This also is a large animal, equal in bulk to perhaps three buffaloes. . . . It has a single horn on its nose more than 9 inches (qarisch) long; one of two qarisch is not seen. . . . The rhinoceros' hide is very thick; an arrow shot from a stiff bow, drawn with full strength right up to the arm-pit, if it pierces at all, might penetrate 4 inches (ailik, hands). From the sides (qash) of its fore and hind legs, folds hang which from a distance look like housings thrown upon it. . . . There are masses of it in the Parashawar and Hashnagar jungles, so too between the Sind river

and the jungles of the Bhira country. Masses there are also on the banks of the Saru river in Hindustan" (Beveridge 1970: 489-490).

Sidi Ali, a Turkish admiral of Suleiman the Great, saw rhinoceroses in northern Pakistan in 1556 (Yule & Burnell 1903: 762). The passage is here translated from the French published by Moris (1826: 201-202):

"We left the city of Pourschewer [Peshawar], and having happily passed the Koutel [Kotak], we came to the city of Djouschayeh. At the Koutel, we saw rhinoceroses approaching in size the elephant. Those rhinoceroses had a horn of two hands length on the forehead; but it is a fact that those living in Abyssinia have longer horns."

Akbar, the 3rd Moghul emperor (1542-1605), had his memoirs written about 1590. The rhinoceros was found in the "Sarkar of Sambal", near Sambhal in Utter Pradesh (Jarratt 1949, II: 285). It is described as follows:

"The rhinoceros is a stupendous creature. He is twice the size of a buffalo and much resembles a horse in armour. His feet and hoofs are like those of an elephant, and his tail similar to a buffalo's, and he has a pastern-joint like a horse. On the point of his snout he carries a single horn and his hide is so thick that an arrow will not pierce it. Of this, breast-plates and shields and the like are made, and he is bold enough to charge a man on horse back" (Jarrett 1949, III: 134).

Jehangir, another Moghul emperor who wrote his memoirs. In the passage given here translated by Beveridge, "wolf" is given instead of "rhinoceros" because the latter was unlikely to live in the region mentioned. This is questioned by Ali (1927: 861) and Kühnel (1941).

"One day I was on an elephant, and was hunting wolves in Aligarh in the Nuh forest.

A wolf appeared, and I struck it with a bullet on its face (mana) near the lobe of the ear. The bullet penetrated for about a span. From that bullet it fell and gave up its life. It has often happened in my presence that powerful (jawanan) men, good shots with the bow, have shot twenty or thirty arrows at them, and not killed" (Beveridge 1968, II: 270).

A Portuguese embassy to Muzafar II, King of Cambaia, was presented with a living rhinoceros in May 1514. Its place of capture is not recorded. It had been kept in Champanel and was transported to Lisbon *via* Goa by the Portuguese. It lived in Lisbon from 20 May 1515 until December 1515, when it was sent to Pope Leo X in Rome. It drowned on its way at the Italian coast near Porto Venere in February 1516 (Da Costa 1937, Rookmaaker 1973: 39-40).

ICONOGRAPHY

There are rather a large number of miniatures and other representations depicting "naturalistic" rhinoceroses made in India between 1500 and 1650. Some have recently been figured, e.g. by Ettinghausen (1950: pls. 21, 30, 32, 33), Brentjes (1969), Lewis *et al.* (1966: pl. 23) and Kühnel (1941: fig. 2). These animals are undeniably rhinoceroses, but few would appear to allow further identification. One such miniature may be mentioned especially. It shows Jehangir hunting rhinoceroses and it is dated c. 1600 (kept in O. Sohn-Rethel collection, Düsseldorf — reproduced by Kühnel 1941, Ettinghausen 1950: pl. 33 and Brentjes 1969). The identity of this animal is discussed below.

DISCUSSION

The records of rhinoceroses in India and Nepal were generally attributed to the Indian

rhinoceros (*R. unicornis*). Blyth (1872: 3107), however, considered that the length of the horn and the possibility to penetrate the hide with arrows mentioned by Babur appeared "tolerably sufficient" to indicate *R. sondaicus* rather than *R. unicornis*. Brentjes (1969) identified an animal in one of the miniatures showing Jehangir's hunt as *R. sondaicus inermis*. The animals in this figure look enough like a single-horned rhinoceros that the appearance of the animal must have been known. These representations, however, were not intended to show characteristics which would allow us to separate the two species of *Rhinoceros*. The miniature discussed by Brentjes probably is one of the few which shows the folds naturalistically, at least at first sight. I believe that this is accidental. There are important differences between the two specimens in the picture and some

folds (anterior shoulder fold and scapular fold) are missing entirely.

All evidence presented above suggests that it was indeed *R. unicornis* which inhabited the northern part of the Indian peninsula until relatively recently. In prehistoric times, this species occurred in parts of Pakistan (Indus valley) and India (Rajasthan, Gujarat, Uttar Pradesh and Bihar). In the 16th century the animal was still rather common in appropriate habitats in N.W. India. There is no reason to suspect that the Moghul emperors hunted captive or imported specimens. There are no records at all for the 17th and 18th centuries. The rhinoceroses must have disappeared from many areas during that period. In the 19th century it was occasionally reported from eastern Uttar Pradesh and Bihar, and it must have been quite rare then.

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